

USER GUIDE
for the

HES91010

SCENESET
Lighting Controller

User Guide for the
Imagine HES91010 SCENESET Lighting Controller
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PREFACE

Scope of this User Guide

This guide covers the installation, connection, setting-up and operation of the Helvar Electrosonic *SCENESET* Lighting Controller HES91010.

The module is designed to be used with other products from the Helvar Electrosonic *Ambience* and *Imagine* ranges. Where applicable, brief details of these products is included. For further details, refer to the User Guide supplied for the appropriate devices.

Technical Specifications

Any technical data required for the correct installation and use of the *SCENESET* Lighting Controller is contained in this user guide.

For full technical specifications of this product, reference should be made to the Technical Source leaflet (ref: EPD05110).

Firmware Version

The operational instructions contained in this user guide assume that the *SCENESET* is fitted with version 1.4 firmware.

Trade Marks

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SECTION 1

INTRODUCTION

This section covers the following topics:

- General Description.
- External Features.

GENERAL DESCRIPTION

The HES91010 *SCENESET* Lighting Controller can control the output levels of up to 128 dimmer channels. The following *Ambience Dimmer* modules are suitable for use with the HES91010:

- HES99400 (4 x 10A Channels)
- HES91200 (12 x 10A Channels)

Alternatively, one or more HES98040 Output Control modules can be used to provide control of electronic ballasts.

Control of the channel outputs is achieved via an S-DIM (Serial DIMmer communications) data highway.

The chosen levels of all 128 outputs are stored as a ‘scene’ on a *SCENESOFT* card. Three cards are available offering different storage capacities; the largest can store 1024 scenes. The card also stores various system and Dimmer parameters.

Scenes can be recalled by various devices via an S-COM (Serial COMmunications) data highway.

Up to eight HES91010 units may be linked together to form a larger system; each module increases the number of channels that can be controlled, up to a maximum 1024 with eight modules. In a multi-*SCENESET* system, one module is designated as a ‘master’ with the others as ‘slaves’.

EXTERNAL FEATURES

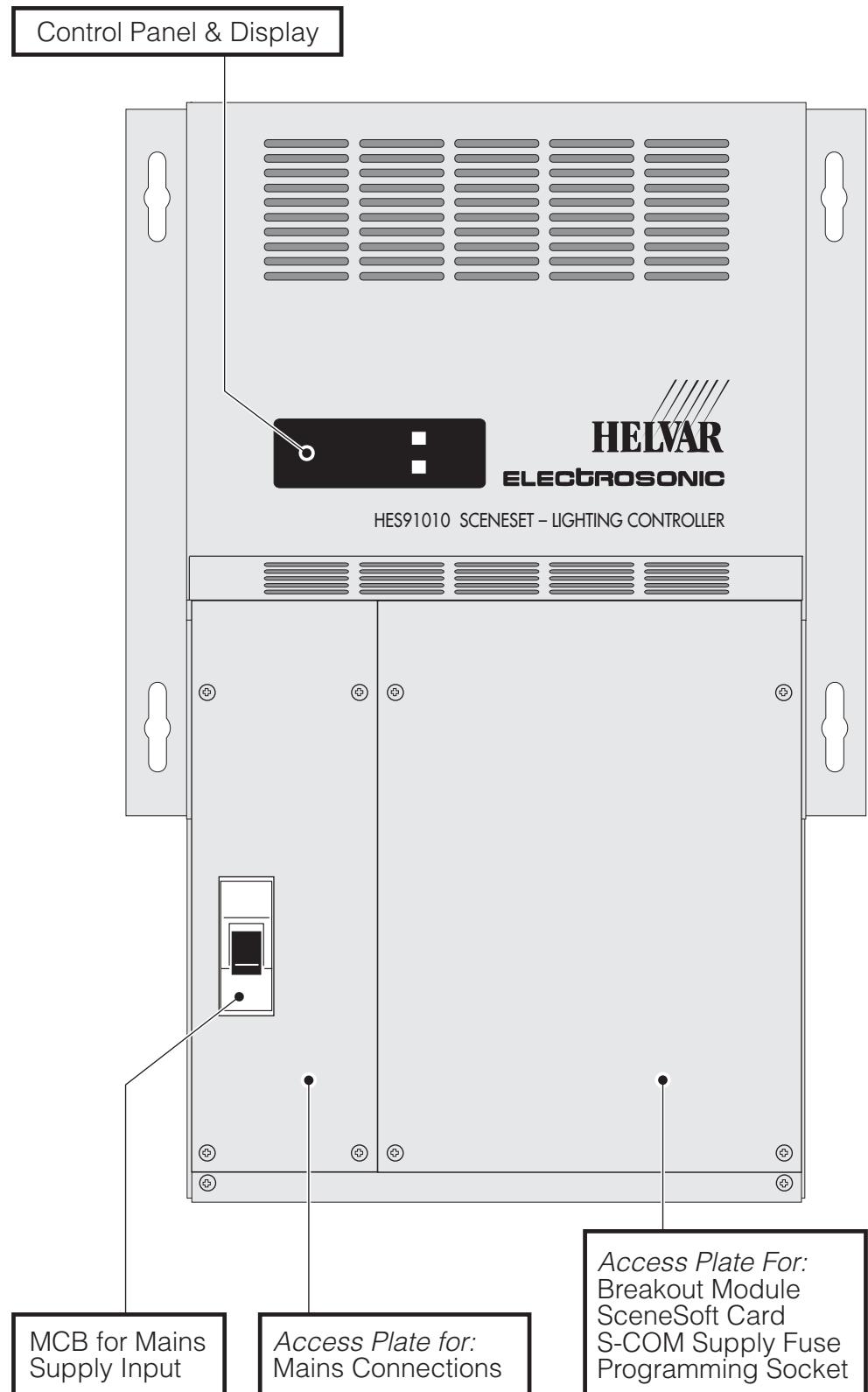


Fig.1-1: External feature of the HES91010.

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SECTION 2

INSTALLATION & CONNECTIONS

This section covers the following topics:

- Installing the *SCENESET* Lighting Controller.
- Cable Access.
- Mains Supply Requirements & Connection.
- Control Connections (*BREAKOUT* Module).
- Suitable Connectors and Cables.
- Configuration Switches.
- Connecting Details for S-COM and S-DIM.
- Watchdog and Level Override Circuit Details.
- *SCENESOFT* Cards.
- Power-up Procedure.

CHOOSING A SUITABLE LOCATION

The HES91010 is designed to be mounted vertically with the connection points at the bottom; this is to ensure correct ventilation.

The chosen mounting surface must be flat and the location must meet the following requirements:

- A clearance of at least 100mm on all sides is recommended to allow for adequate ventilation.
- Sufficient clearance must be left below the unit to allow for the connection of cables, conduits or trunking.
- The ambient temperature must be within the range 0C to 35C; the area should be adequately ventilated.
- Humidity should be within the range of 0 to 90% (non-condensing). DO NOT install this product in a damp location.

Fixing Method

Mounting is achieved by using the four 'keyhole' fixing holes on the side flanges. The fixing screws (not supplied) must be chosen to suit the following criteria:

- **Wall Construction** – suitable wall plugs must be used for masonry construction and plasterboard partitions.
 - **Screw Length** – must be sufficient to securely anchor the unit.
 - **Screw Head** - round-head, pan-head or cheese-head screws must be used. The head size should be small enough to just pass through the large area at the centre of the fixing hole and large enough to clamp the flange securely in the slotted portion of the hole.
1. Mark and drill four holes to correspond with the centres of the fixing holes (see Fig.2-1), and fit wall plugs as required. Note the drop-down clearance of 12mm.
 2. Insert the screws, and screw them in until the distance between the wall and the underside of the screw heads is a little more than the depth of the flange.
 3. Align the centres of the flange fixing holes with the screws, then allow the slotted part of the holes to drop-down behind the screw heads. If necessary, loosen the screws to ease this operation.
 4. Finally, tighten all four screws sufficiently to prevent the unit from being lifted away.

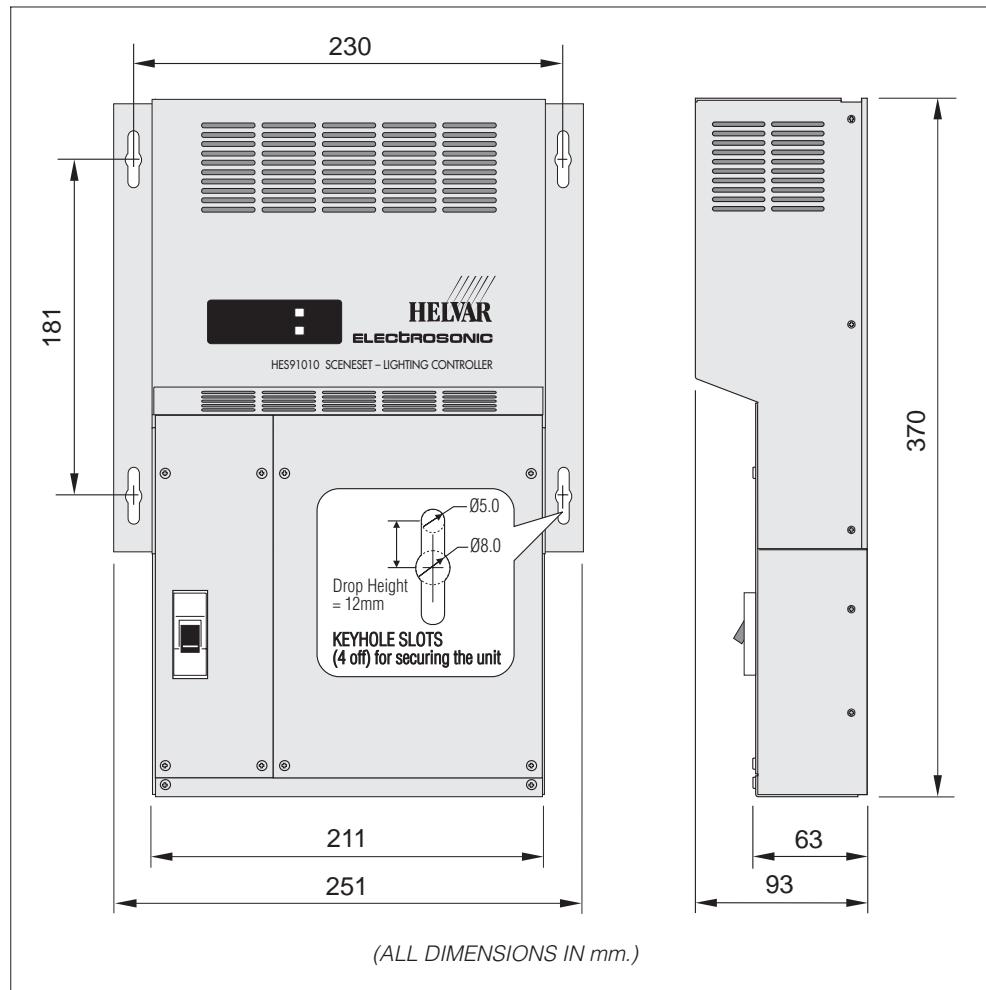


Fig.2-1: Overall dimensions & fixing centres.

CABLE ACCESS

There are various 'knock-outs' on the base of the unit which are suitable for 15, 20, or 25mm conduit fixings (see Fig.2-2).

These are arranged such that the three left hand positions are used exclusively for mains cables, whilst the remainder are used for the FELV (Functional Extra-Low Voltage) control connections.

If required, control cables which are not in conduits can enter the unit via the slot behind the knock-outs.

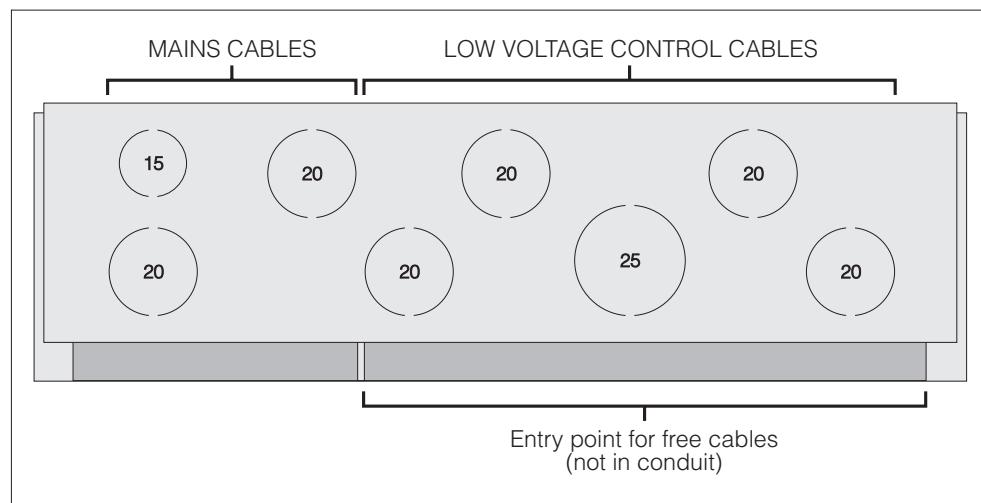


Fig.2-2: Cable entry knock-outs.

MAINS SUPPLY INPUT

Voltage Range

The HES91010 is factory-set for use with one of the following voltage ranges which cannot be changed by the user:

- **230V a.c.** (nominal); **180V – 260V a.c.** (absolute). or
- **115V a.c.** (nominal); **90V – 130V a.c.** (absolute).

Check that the unit is set for the correct range for the intended power supply by referring to the serial no./rating plate which is mounted inside the control connection compartment (behind the right-hand access plate).

WARNING: THE MAINS INPUT MUST BE CONNECTED TO A SINGLE-PHASE SUPPLY ONLY AND MUST BE EARTHED.

CAUTION: Connecting a supply which exceeds the maximum limit for the appropriate input range may cause irreparable damage to the SCENESET.

Frequency Range

The input supply frequency should be within the the range 45 – 65Hz.

Supply Protection

The supply input is protected by the internal 3A MCB. No further external supply protection is required.

Connecting the Mains Supply

Access to the mains input terminals is gained by removing the left-hand access plate (four-screw fixing).

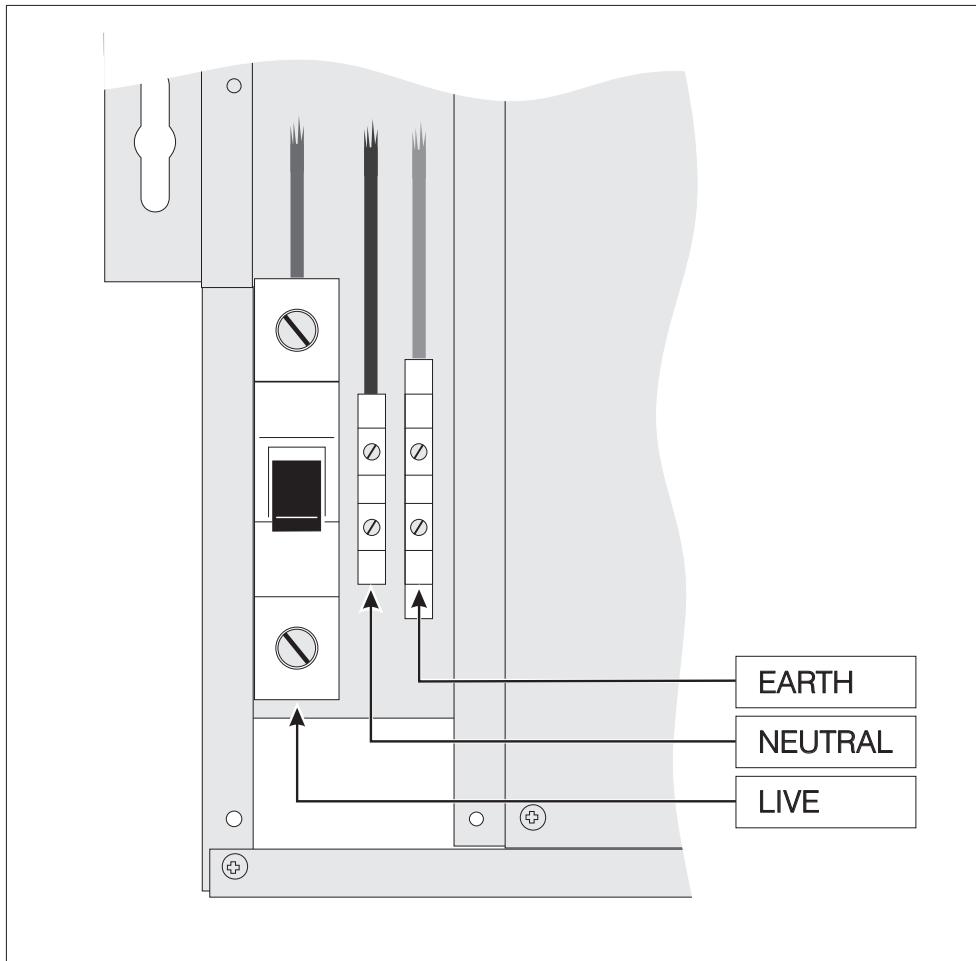


Fig.2-3: Mains connection terminals.

Cable Function	Connection Point
Live Input	Bottom screw terminal of the MCB
Neutral	Cream coloured screw-terminal block.
Earth	Green/Yellow coloured screw-terminal block.

Suitable cable type: Solid, stranded or flexible.
 Cable size: 1.5mm² – 4.0mm².
 Stripping length: 12mm (*for MCB*)
10mm (for other terminals).

BREAKOUT MODULE

The *BREAKOUT* module is located behind the right-hand access plate and provides connection points to the various FELV (Functional Extra-Low Voltage) data and control circuits (see Fig.2-4.).

- S-COM (external) power & data highway.
- S-COM (star) data highway.
- S-COM (internal) data highway.
- S-DIM data highways.
- *SCENESET* watchdog relay contacts.
- *BREAKOUT* module relay coil and contacts.
- *DIMMER* level override input.

These allow the connection of various external control input or output devices and enable separate *SCENESETS* to be linked. Details of each connector and its function are given on subsequent pages.

NOTE *The 'TEMP OVRD' connector is not used.*

Suitable Cable

All of the S-COM and S-DIM data highways require a screened twisted pair, whilst all other connections should use equipment wire. For full details, refer to the Helvar Electrosonic Control Cable Specifications data sheet (part no. I237GB).

Special S-COM cable is available from Helvar Electrosonic which comprises the following conductors in an overall sleeve:

- Twisted pair with screen (for data lines).
- Two power wires (for S-COM supply).

This is ideally suited for use with the S-COM (external) line, but may also be used on the other S-COM and S-DIM lines if the two power wires are cut back.

Power Ground, Common & Screen

These connections are all nominally at 0V. Power ground and common are electrically identical. However, the screen connection is isolated unless the link LK1 is present (not normally fitted).

All screen connections are electrically connected to the *SCENESET* chassis (i.e. at Earth potential).

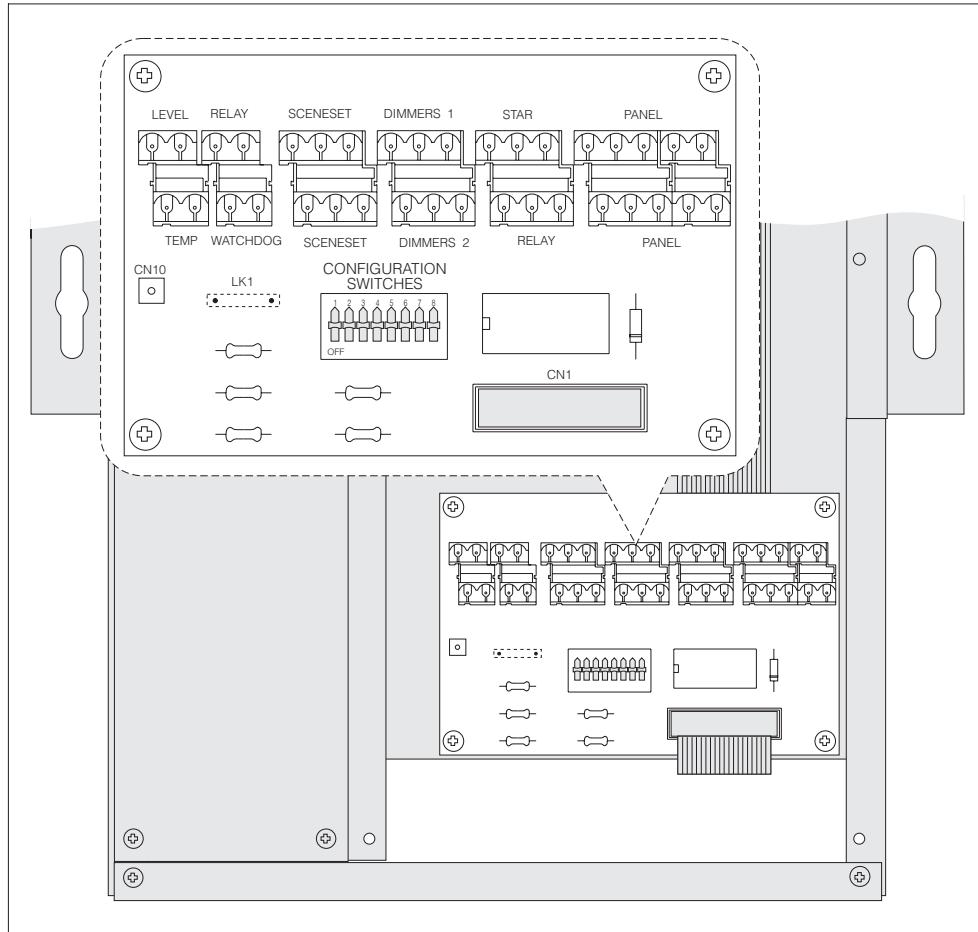


Fig.2-4: Layout of BREAKOUT module.

Suitable Mating Connectors

Electrosonic part numbers: P9820 (2-way).

P9830 (3-way).

P9850 (5-way).

Cable size: 0.2 – 2.5mm².

Stripping length: 7.0mm.

Configuration Switches

A bank of eight DIL slide switches is provided on the module which are used for the following purposes (from left to right):

- Switches 1 – 3 To select different interconnections of the *SCENESET* watchdog and *DIMMER* level override circuits .
- Switches 4 – 8 To select line termination on the various data highways .

All of the configuration switches are factory-set to the 'ON' (up) position, but these can be changed if required.

GENERAL GUIDELINES FOR S-COM AND S-DIM

The following guidelines apply to S-COM (external), S-COM (internal) and S-DIM data highways. The term ‘device’ refers to the *BREAKOUT* module or any other unit which may be connected to the S-COM or S-DIM lines.

Data Highway Requirements

Devices may be located at one end of a highway or at some point along it. Each connecting point to a device is defined as a ‘node’, with each device being linked to the next, to form an open-ended ‘daisy-chain’ (Fig.2-5).

To ensure reliable operation, the nodes should be positioned as evenly as possible along the length of the highway.

The *total* length of a data highway should not exceed 1000m unless otherwise stated.

Devices must not be connected to highway by means of a ‘spur’, nor must the two ends of a highway be joined to create a ‘ring circuit’.

Line Termination

The line termination switches allow the connection of a resistor across each data line. These are set in accordance with the following conditions.

Set the switch to the ‘ON’ position (default) if:

- The data highway connection is not used.
- The device is located at one end of the data highway.

Set the switch to the ‘OFF’ position if:

- The device is located along the data highway.

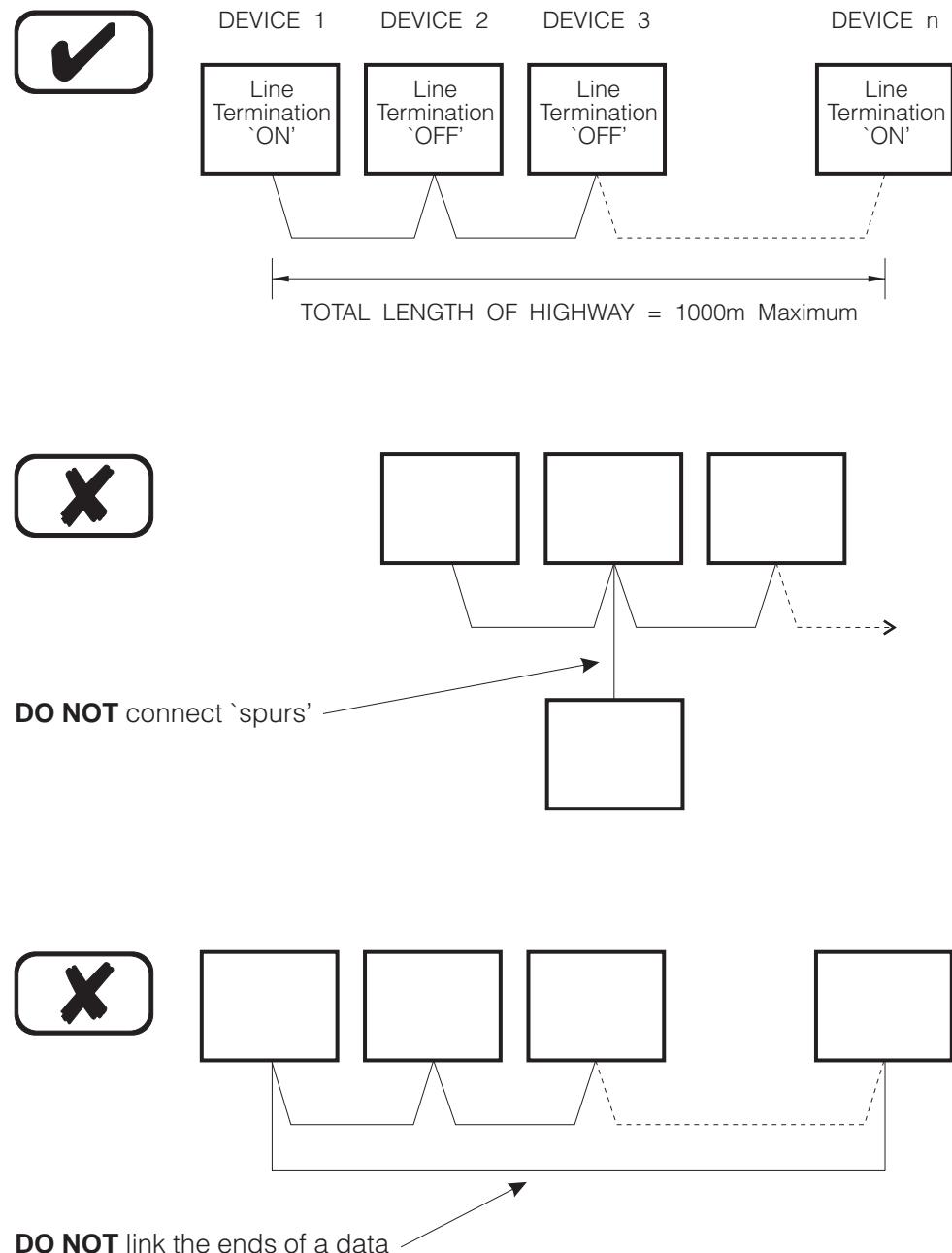


Fig.2-5: Correct configuration of data highways.

S-COM (external)

This data highway is used to connect the following scene-recall devices:

- *SCENE COMMANDERS.*
- *SCENE TIMER.*
- *INPUT Module.*
- *CHANNEL COMMANDER*
- *STAR DISTRIBUTION Unit* [also requires S-COM (star) line].

Connection Details

CAUTION

Ensure that the SCENESET controller is turned-off before attempting to connect the S-COM (external) highway.

Connection of the S-COM (external) highway is made via the 5-way connectors labelled ‘PANEL’ (Fig.2-6). Both connectors are electrically identical. If the *BREAKOUT* module is located along the data highway, one connector should be used for each half of the highway.

Mating connector part no.: P9850 (5-way).

Cable size: 0.2 – 2.5mm².

Stripping length: 7.0mm.

CAUTION

Please note that the power supply connections are different on issue C and D BREAKOUT Modules — check for correct polarity before powering the S-COM line.

Check that all connections are correct and that there are no short-circuits before powering-up the SCENESET controller. In particular, ensure that the data lines are not accidentally or deliberately connected to the supply lines.

Incorrect connections may result in damage to the internal circuitry of the controller and of any other devices connected to the S-COM (external) highway.

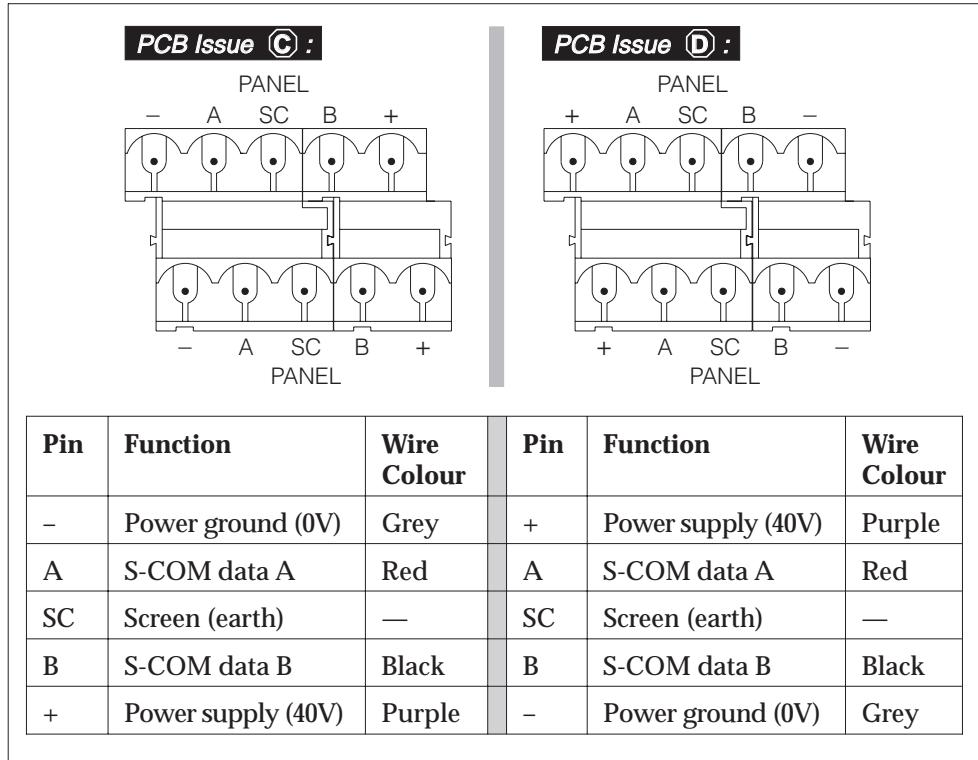


Fig.2-6: Connection details for S-COM (external).

S-COM Loading

Each device that can be connected to the S-COM (external) data highway has a Unit Loading Factor (ULF) according to its power consumption. The total of the ULF's for all devices connected must not exceed 30:

<i>SCENE COMMANDER:</i>	1
<i>SCENE TIMER:</i>	1
<i>INPUT module:</i>	1 (using bistable inputs & LCS only). 1.5 (using LCS, analogue & bistable inputs).
<i>LCS panels:</i>	0.25 (via <i>INPUT module only</i>).
<i>LCS infra-red unit:</i>	0.5 (via <i>INPUT module only</i>).
<i>CHANNEL COMMANDER:</i>	1
<i>STAR DISTRIBUTION unit:</i>	2.

The S-COM (external) line also has the capacity to support either *SCENEMAKER* or *SCENEPLANNER* without affecting the total number of devices permitted.

Line Termination

If the *BREAKOUT* module is located at one end of the data highway, set switch 4 ('PANEL') to the 'ON' position (see Fig.2-7).

If the module is located along the highway, set switch 4 to 'OFF'.

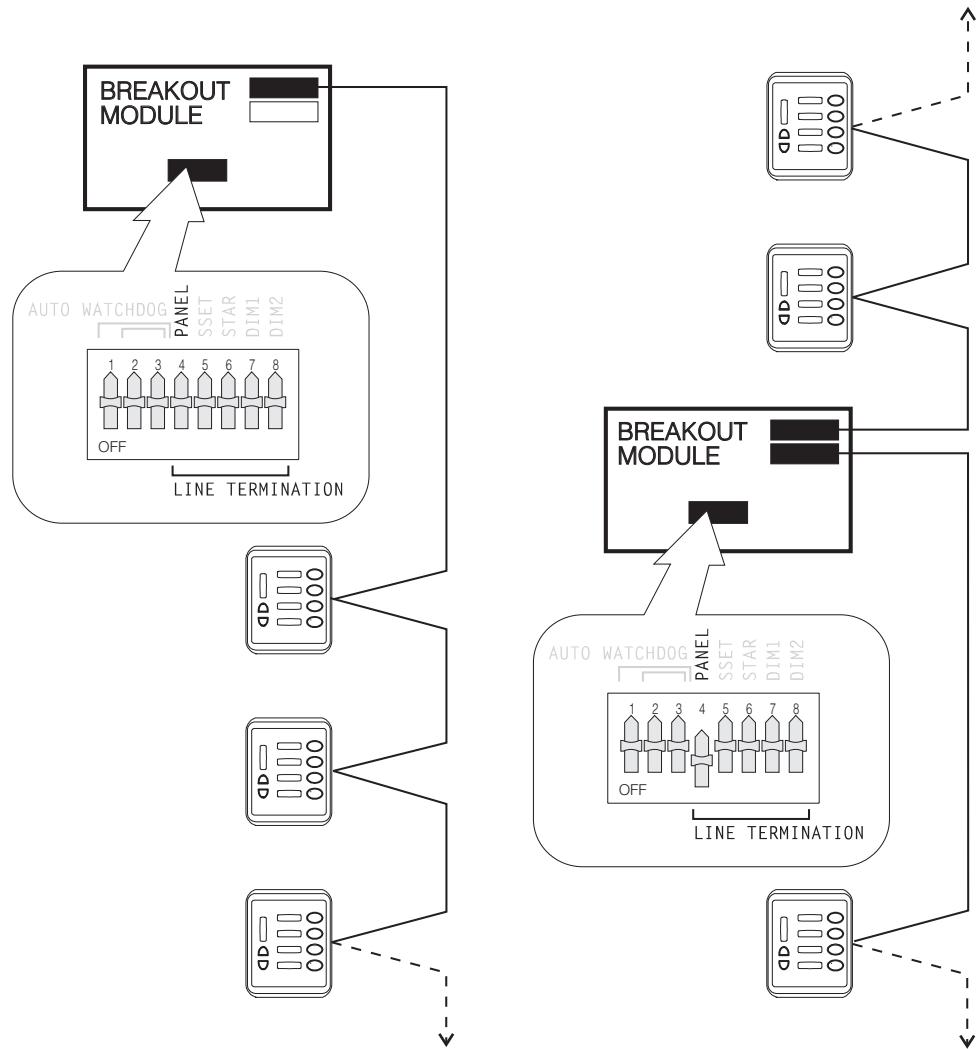


Fig.2-7: *S-COM* termination on *BREAKOUT* Module.

S-COM (star)

This data highway is used for the connection of a *STAR DISTRIBUTION* unit (ES9855). This allows the S-COM (external) to be split into six ‘spurs’ (Fig.2-9). Each spur is then wired using the normal ‘daisy-chain’ method.

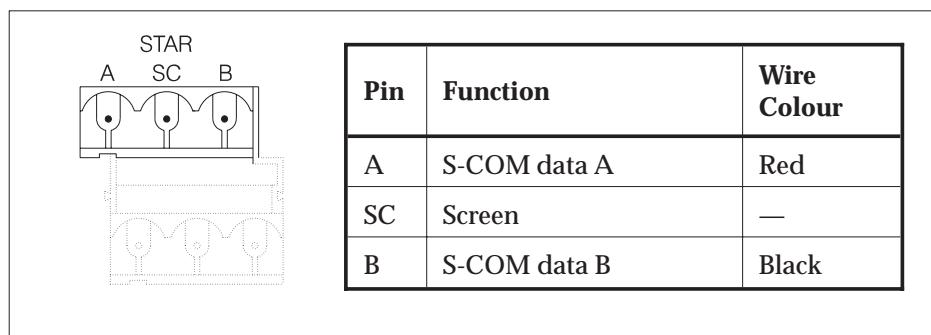
Devices should be distributed as evenly as possible amongst the spurs and along the length of each spur. The ‘open’ end of each spur must not be linked to another and the total length of each spur must not exceed 1000m.

The length of the S-COM (external & star) lines between the *BREAKOUT* module and the *STAR DISTRIBUTION* unit must not exceed 1000m.

Connection Details

Connection of the S-COM (external) highway is made according to the details given on page 15.

Connection of the S-COM (star) highway is made via the 3-way connector labelled ‘STAR’ (Fig.2-8):



Pin	Function	Wire Colour
A	S-COM data A	Red
SC	Screen	—
B	S-COM data B	Black

Fig.2-8: Connection details for S-COM (star).

Loading

Only one *STAR DISTRIBUTION* unit can be connected to the S-COM (star) line. No other devices must be connected to the S-COM (external) line between the *BREAKOUT* module and the *STAR DISTRIBUTION* unit.

The total number of devices connected to *all* of the spurs is calculated in the same manner as described on page 16. But, remember that an additional ULF of 2 is required for the *STAR DISTRIBUTION* unit itself.

Line Termination

Switch 6 ('STAR') must always be set to the 'ON' position .

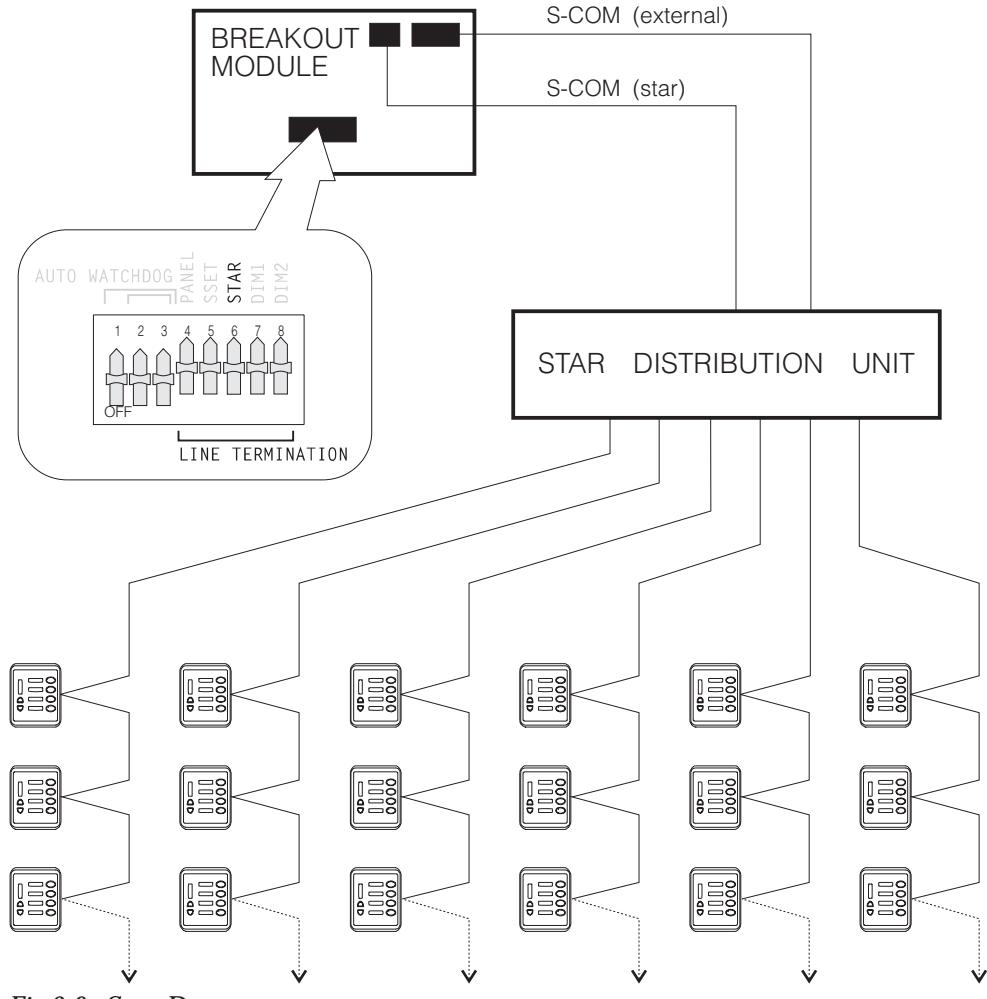


Fig.2-9: STAR DISTRIBUTION Unit.

S-COM (internal)

This highway is used to link together separate *SCENESET* modules, thus allowing the number of controlled outputs in a system to be increased beyond 128.

In a multi-*SCENESET* system, only one can act as a ‘master’ and this is determined by the address programmed into the *SCENESOFT* card. The designated master module can be located at any point along the data highway.

Connection Details

Connection is made via the 3-way connectors labelled ‘*SCENESET*’ (Fig.2-10). Both sets of three pins are electrically identical. If the *BREAKOUT* module is located along the data highway, one connector should be used for each half of the highway.

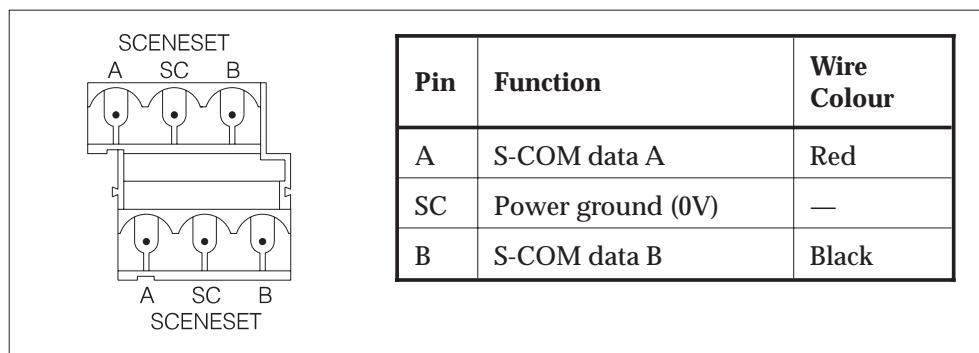


Fig.2-10: Connection details for S-COM (internal).

Loading

Up to eight *SCENESET* modules may be connected to the S-COM (internal) line. This is the maximum number supported by the system.

Line Termination

If the *BREAKOUT* module is located at one end of the data highway, or if the connection is not used, set switch 5 (‘SSET’) to the ‘ON’ position.

If the module is located along the highway, set switch 5 to the ‘OFF’ position.

S-DIM

Two data highways are available (S-DIM #1 and S-DIM #2) which can be used to connect various output devices (e.g. *DIMMER* modules, *OUTPUT* modules, etc.).

Connection Details

Connection to each S-DIM highway is made via the 3-way connectors labelled ‘DIMMERS 1’ and ‘DIMMERS 2’ (Fig.2-11). Both S-DIM highways are functionally identical but are electrically buffered. If the *BREAKOUT* module is located along either data highway, both halves of the highway need to share the same connector.

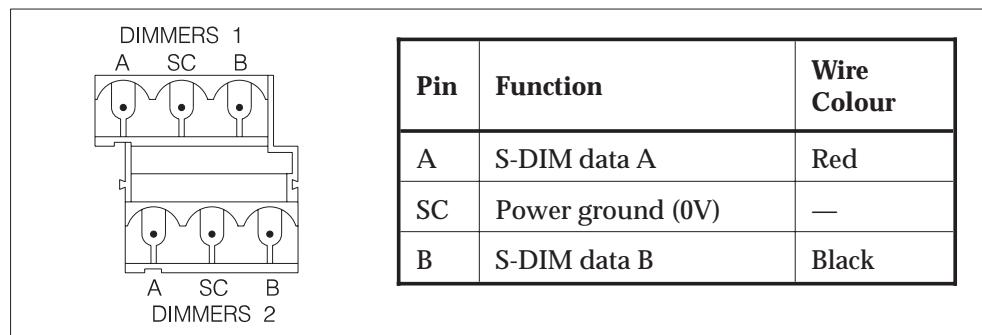


Fig.2-11: Connection details for S-DIM #1 & S-DIM #2.

Loading

Each highway can support up to 64 channels (e.g. 16 x HES99400). Thus a total of 128 channels can be controlled when using both highways.

Line Termination

If the *BREAKOUT* module is located at one end of the data highway(s), or if the connections are not used, set switch 7 (‘DIM 1’) or switch 8 (‘DIM 2’) to the ‘ON’ position accordingly.

If the module is located at some point along the highway(s), set switches 7 or 8 to the ‘OFF’ position.

WATCHDOG/LEVEL OVERRIDE

The *SCENESET* watchdog and *DIMMER* level override circuits are provided to allow the *DIMMER* outputs to be taken to a pre-defined level if the *SCENESET* loses control (automatic watchdog). This level override facility can also be triggered by a separate security/fire alarm system.

These two circuits, together with a relay on the *BREAKOUT* module can be interconnected by using switches 1, 2 & 3 (see Fig.2-12).

With all three switches set to the ‘ON’ position (default), automatic watchdog is enabled; with all three switches set to the ‘OFF’ position, automatic watchdog is disabled.

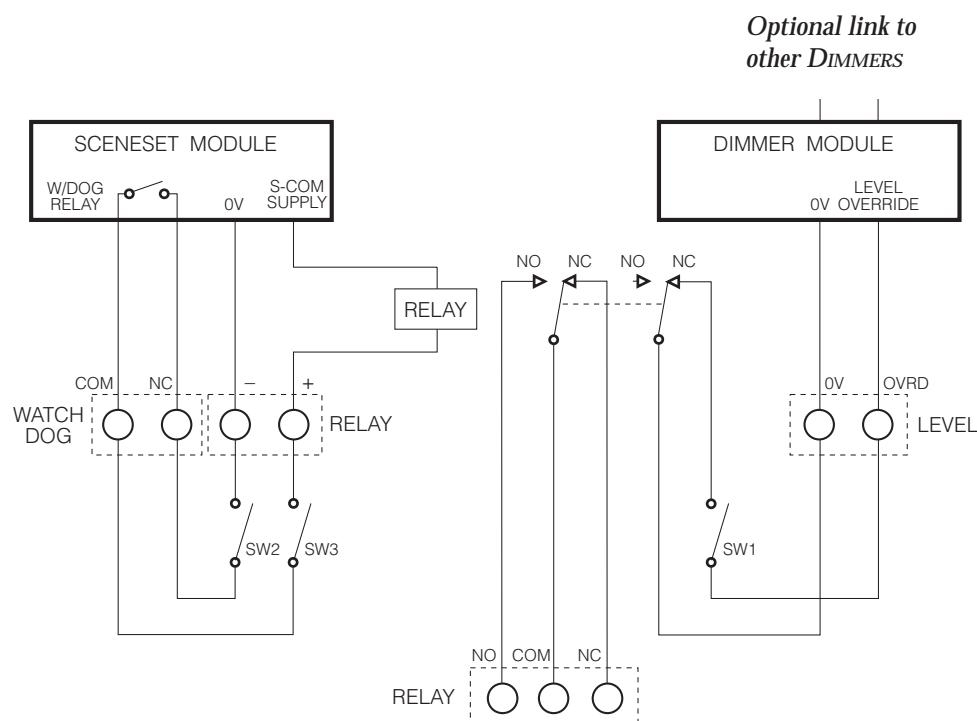
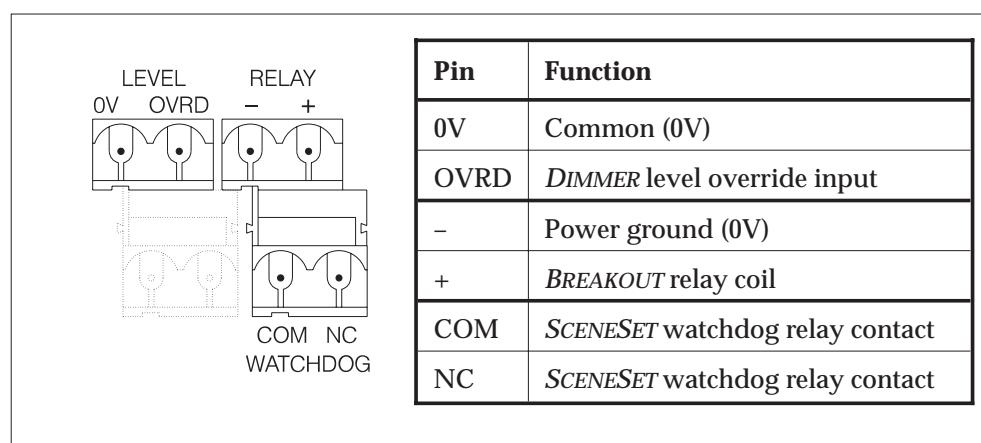


Fig.2-12: Watchdog and level override circuit details.



DIMMER Level Override

The level override input appears on pin ‘OVRD’ of the 2-way connector labelled ‘LEVEL’. If this is shorted to pin ‘0V’, level override will be activated causing the output of each *DIMMER* channel (on the S-DIM highway) to change to its preset override level.

SCENESET Watchdog Relay Contacts

These two contacts appear on pins ‘COM’ and ‘NC’ of the connector labelled ‘WATCHDOG’. When the *SCENESET* is powered-up and functioning correctly these contacts are shorted together. If the module is removed or de-powered, or if it loses control, the contacts go open circuit.

BREAKOUT Relay Coil

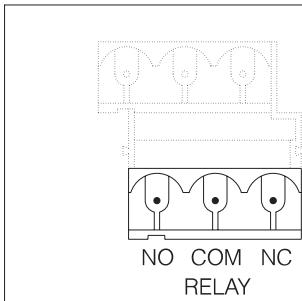
One side of the coil is supplied by the S-COM power supply with the other side open-circuit and appearing on pin ‘+’ of the 2-way connector labelled ‘RELAY’. To activate the relay, this pin is shorted to pin ‘-’ (0V).

BREAKOUT Relay Contacts

The relay has two sets of change-over contacts. One set is for use by the level override function, with the common contact connected to 0V; therefore with the relay inactive, contact NC is at 0V.

The other set is available for any user-defined function. These contacts are isolated from all other connections and appear on the 3-way connector labelled ‘RELAY’ (see Fig.2-14):

Max. switching voltage: 50V DC.
Max. switching current: 1A resistive.



Pin	Function
NO	<i>BREAKOUT</i> relay contact NO
COM	<i>BREAKOUT</i> relay contact COM
NC	<i>BREAKOUT</i> relay contact NC

Fig.2-14: Connection details for relay spare contacts.

Configuration Switches 1, 2 & 3

These are factory-set to the ‘ON’ position but may be changed as required.

Switches 2 & 3, although separate, are always operated as a pair. When these are placed in the ‘ON’ (closed) position, the watchdog relay contacts are connected to the *BREAKOUT* relay coil. Thus if the watchdog relay contacts are closed (normal condition), the coil will be energised. If the watchdog relay opens (fault condition), the coil will be de-energised.

With switch 1 in the ‘ON’ position, the relay contact NC is linked to the level override input. Thus with the *BREAKOUT* relay de-activated, 0V is present on contact NC and level override is enabled. With the relay activated, level override is disabled.

SCENESOFT CARDS

There are two slots behind the right-hand access plate which are used for *SCENESOFT* memory cards (see Fig.2-15):

The card in slot 'A' (which is nearest the front panel) is used by the *SCENESET* Lighting Controller to retrieve and store the following data:

- *SCENESET* address.
- *DIMMER* output levels for each scene.
- *DIMMER* parameters.
- Scene parameters (linking, fade times, re-directions, etc.).

A *SCENESOFT* card must be plugged into slot 'A' to allow the *SCENESET* to function correctly. The card can either be pre-programmed or programmed *in situ* by connecting a *SCENEMAKER* or *SCENEPLANNER* to the Programming Connector.

Slot 'B' is used in conjunction with the *SCENESET*'s Copy function to make a copy of the card in Slot 'A' (see section 3 page 36 for further details).

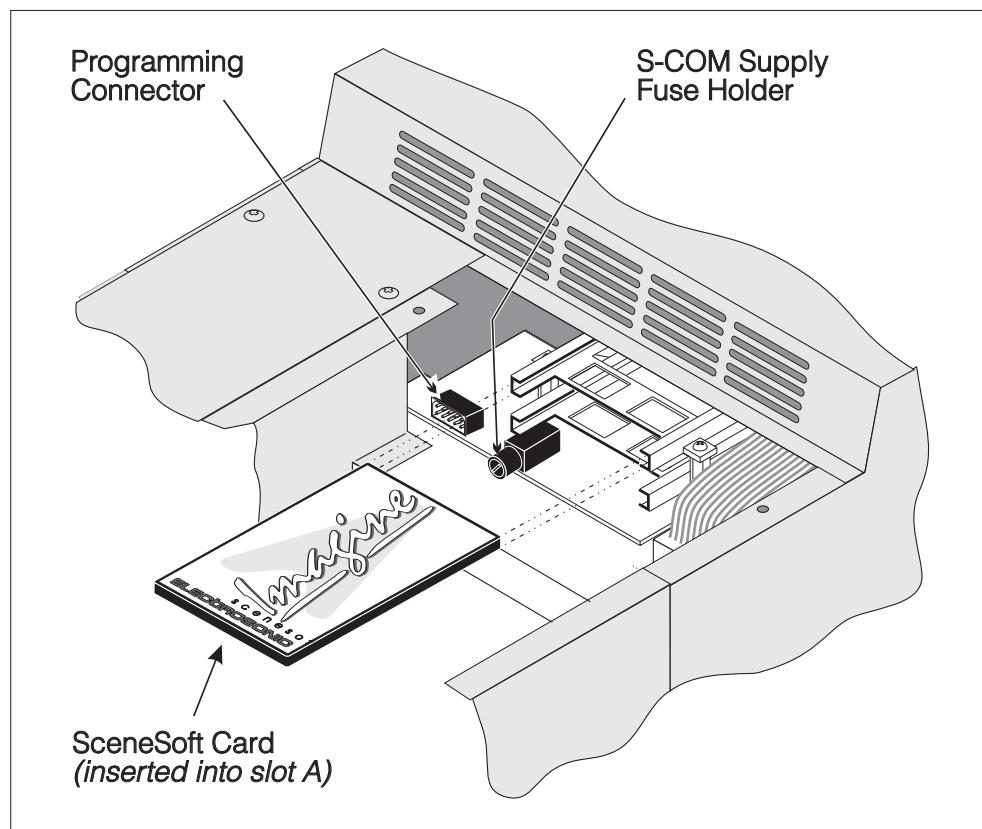


Fig.2-15: Card slots, program connector & fuse holder.

Card Capacity

The number of scenes stored on the card depends on its capacity. Three types of card are available offering different system capabilities:

Card Type/Capacity	Scenes	Triggers	Redirects	Clusters
HES90120 8K	40	10	10	2
HES90240 128K	600	150	150	15
HES91280 512K	1024	500	500	50

Choose the card type carefully to match current requirements, and also allow for any anticipated future expansion.

Default Scene

The *SCENESOFT* card can be programmed to perform one of two actions when the *SCENESET* is powered-up:

- Default to scene zero ('000').
- Restore the last known output levels ('000' is displayed but any programmed levels for scene zero are ignored).

NOTE *Whilst scene zero can be programmed in the same way as any other, it cannot be recalled via the S-COM line (except with SCENEPLANNER).*

POWER-UP PROCEDURE

Procedure	Display & Buttons
<p>1. Remove the right-hand access plate and insert a programmed <i>SCENESOFT</i> card into slot 'A' (nearest the front) and turn-on the mains supply.</p> <p><i>Note:</i> Ensure that the card is correctly orientated i.e. with the logo side facing outwards and with the 'arrowhead' symbol pointing towards the slot.</p>	(see Fig.2-15)
<p>2. After approximately one second, the display should change to show scene zero.</p> <p>If the display shows three dashes, this indicates that the card cannot be read. This may be caused by an unformatted card, or if the card's internal battery is discharged or missing.</p> <p>Refer to section 4, page 46.</p>	 
<p>3. The <i>SCENESET</i> will now perform a 'logging-on' process of all the devices connected to it. This may take up to 30 seconds in a large system, during which time the display will not change.</p>	
<p>4. If the diagnostic flag indicator is lit (between the first two digits), one or more diagnostic codes are waiting to be displayed.</p> <p>Refer to section 3, page 32.</p>	

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SECTION 3

CONTROL PANEL & DISPLAY

This section covers the following topics:

- Controls and Display Functions.
- Last Selected Scene.
- *SCENESET* Address.
- Diagnostic Codes.
- Manual Scene Selection.
- *SCENESOFT* Card Copying.

CONTROLS AND DISPLAY FUNCTIONS

The *SCENESET* Lighting Controller has a control panel with two push-buttons and a three-character digital display (Fig.3-1).

In addition there are eight LED indicators (arranged in pairs of red and green) that show the status of the various data highways. Under normal conditions these should all be lit; if any fail to light, there is a fault — refer to section 4, page 45.

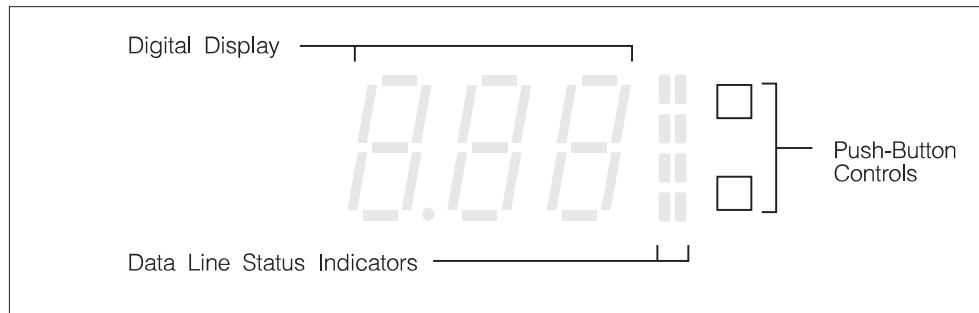


Fig.3-1: *SCENESET* control panel.

Display Modes

The display can be used in five different modes:

- Last Scene — shows number of the last selected scene.
- *SCENESET* Address — shows the address of the unit.
- Diagnostic — shows any diagnostic codes.
- Scene Select — allows a scene to be selected manually.
- Card Copy — allows a *SCENESOFT* card to be copied.

Default Mode

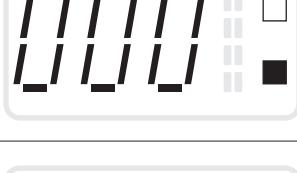
The display always shows the Last Scene mode after the module is powered-up. Any display modes which are selected subsequently will revert to Last Scene mode if no buttons are pressed within 10 seconds.

Address Mode

Up to eight *SCENESET* units can be linked together. In such cases, each unit must be allocated a unique address within the range A01 to A08.

This cannot be set from the *SCENESET*'s control panel, but must be programmed by *SCENEMAKER* or *SCENEPLANNER*. The address is then stored on the *SCENESOFT* card. In a multi-*SCENESET* system, address A01 defines the 'master' *SCENESET* (or 'bus master').

Changing the Display Mode

Procedure	Display & Buttons
1. With the display showing the Last Scene Mode, press the lower button.	
2. The display will change to show the SCENESET Address Mode. Press the lower button again to select the next mode. Maintaining pressure on the button will cause the display to step through each mode.	 
Diagnostic Mode... 	
Scene Select Mode... 	
Card Copy Mode... 	
Then back to Last Scene Mode... 	
Address Mode... etc. 3. Releasing the button will select the mode currently displayed.	
4. Press the top button to return the display to the Last Scene Mode.	

DIAGNOSTIC MODE

If the dot between the first two digits is illuminated in any display mode (Fig.3-2), this indicates that the SCENESET has diagnostic codes waiting to be displayed.

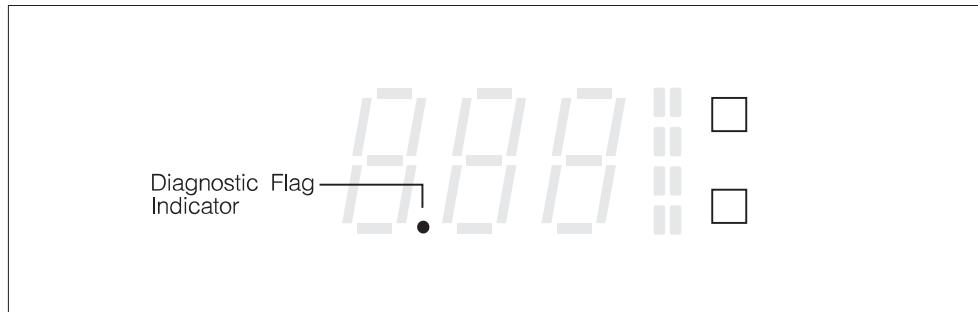


Fig.3-2: Diagnostic flag indicator.

Each code comprises a three-digit number which corresponds to one of the messages or conditions listed in section 4, page 40.

Viewing the Diagnostic Codes

Procedure	Display & Buttons
<p>1. Press the lower button until the display shows the Diagnostic Mode.</p> <p>Note: The dot between the first two digits indicates that one or more diagnostic codes are waiting.</p>	
<p>2. To view the codes, press and hold both buttons at once until the display flashes, then release both buttons.</p>	
<p>3. The display will show a 3-digit number which corresponds to one of the messages listed in section 4, page 40.</p>	
<p>4. Press the lower button again. If there is another code present, its number will be displayed.</p> <p>When the last code has been shown, the display will show '000' and the diagnostic flag will clear.</p> <p>Note: As each code is displayed, an attempt is made to clear it. If a code cannot be cleared, or has recurred, the flag will stay set. If this happens, press the lower button again to view the code number(s).</p>	 
<p>5. Assuming any codes have been reset successfully, clear the display by pressing the top button.</p>	
<p>6. Press the top button again to return to the Last Scene Mode.</p> <p>OR Press the lower button to go on to the next mode.</p>	

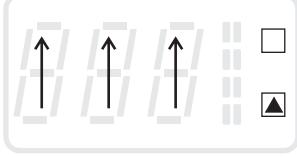
SCENE SELECT MODE

This mode enables a scene to be recalled manually.

When the *SCENESET* is in normal use, scenes are recalled by the devices connected to the S-COM data highway, or by internally programmed scene ‘triggers’.

Therefore, this scene select function is normally used for testing and setting-up purposes only.

Changing the Current Scene

Procedure	Display & Buttons
1. Press the lower button until the display shows the Scene Select Mode.	
2. To activate this mode, press and hold both buttons at once until the display flashes, then release both buttons.	
3. The display will show '000'.	
4. Press the lower button to step up through the available scene numbers. <i>Note: Holding the button will cause the display to cycle upwards until the button is released. When the highest is reached (depending on the SCENESOFT card) the display will resume counting from 000.</i>	
5. When the required scene number is displayed, press both buttons at once to select that scene. OR To keep the scene originally selected, go to step 6. OR To make another selection, repeat steps 4 and 5.	
6. Clear the display by pressing the top button.	
7. Press the top button again to return to the Last Scene Mode. OR Press the lower button to go on to the next mode.	

CARD COPY MODE

This mode allows the contents of the *SCENESOFT* card in slot 'A' to be copied to another card in slot 'B'.

This is useful for creating backups, or for setting-up a new card to experiment with existing lighting scenes without affecting the originals.

Suitable Cards

Only Electrosonic *SCENESOFT* cards are suitable for use with the *SCENESET* Lighting Controller, and the card must be correctly formatted.

The 'A' card can only be copied to a 'B' card that has the same capacity. For details of card capacities, refer to section 2, page 26.

IMPORTANT NOTE

*It is not necessary for the card in slot 'B' to be blank for copying to take place.
Any information previously stored on the this card will be erased!*

Copying a SCENESOFT Card

Procedure	Display & Buttons
1. Press the lower button until the display shows the Card Copy Mode.	
2. Ensure that a suitable card is inserted in slot 'B', then press and hold both buttons at once until the display flashes, then release both buttons.	
3. The display will show '***' while copying is in progress. <i>Note: Copying time should not exceed 15 seconds for the largest card capacity.</i>	
4. When copying is complete, the display will show 'CPY' again. <i>Note: If any problems have occurred during the copy process, the diagnostic indicator flag will be set (see page 32).</i>	
5. Press the top (or lower) button to return to the Last Scene Mode.	

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SECTION 4

SCENESET TROUBLESHOOTING

This section covers the following topics:

- Diagnostic Codes.
- Data Line Status Indicators.
- S-COM Fuse Replacement.
- Problem Diagnosis.

DIAGNOSTIC CODES

The diagnostic code numbers that can be viewed on the integral control panel correspond to abnormal conditions or incorrect data. These are most likely to have been caused by incorrect system configuration.

The most commonplace codes are listed on the following pages along with their probable causes and any action that needs to be taken if they occur.

These codes are placed in three categories according to the degree that the system can be affected:

- ‘Fatal’.
- Intermediate.
- Communication.

Interference and ‘Noise’

If a code number is generated which is not listed, this may indicate a problem caused by incorrect or corrupted data.

This is most likely to have been due to spurious ‘noise’ on the S-COM or S-DIM data lines. It could also be the result of another device in the system being incorrectly set-up or connected.

If several codes are generated which are seemingly unconnected or if a code only occurs rarely, noise or interference is the most likely problem.

'Fatal' Codes

In the event of a 'Fatal' code, it is highly likely that the system will halt or will be severely disrupted until the cause has been rectified.

Code	Likely Cause	Action
102 103 105 111 121	The SCENESET card cannot be read correctly because: <ul style="list-style-type: none"> • It is not a valid card. • It is not securely inserted. • It has been withdrawn with the SCENESET still powered. • The card's internal battery is discharged or missing. 	Check that the card is present and fully inserted into slot 'A'. If the code still occurs, try another card. Note: <i>If the battery is found to be at fault, the card may need to be reformatted once a new battery has been fitted.</i>
104	An attempt to copy a SCENESET card has failed because a backup card is not present in slot 'B' or cannot be read.	Check that a card is fully inserted into slot 'B'. Check that the backup card has the same (or larger) capacity as the main card. If the code still occurs try another card.
232	There is a fault on the S-COM line. Note: <i>This can be the result of an S-COM power supply failure.</i>	Check for blown or missing S-COM fuse. Check all S-COM data highway wiring and connections.

Intermediate Codes

These codes will usually cause part of the system to halt or may cause erratic operation of certain functions.

Code	Likely Cause	Action
110	<p><i>SCENESSET</i> has received a request for a scene which is outside the range of the <i>SCENE^{SOFT}</i> card.</p> <p>Note: This is likely to have been caused by an S-COM device being set to the wrong address, or by an attempt to call an invalid scene from a programming device.</p>	Check that the devices connected to the S-COM (external) line are set to a valid address.
106 107 108 112 113 122 132 140 141 142 143 402	<p>An attempt has been made to program an invalid system parameter via <i>SCENEMAKER</i> or <i>SCENEPLANNER</i>.</p>	<p>Check the User Guide for the programming device, and re-program the system using the correct values.</p> <p>Check that the <i>SCENE^{SOFT}</i> card is the correct size for the system.</p>
202	<p>The ‘master’ <i>SCENESSET</i> has failed to communicate with a ‘slave’ <i>SCENESSET</i>.</p> <p>Note: This code can also occur if a programming device attempts to communicate with a disconnected or inoperative module. In this case, the code will appear on the programming device’s display only.</p>	<p>Check that all <i>SCENESSET</i> modules are on-line and functioning correctly – the affected module may have its diagnostic flag set.</p> <p>Check all S-COM (internal) data highway wiring, connections and line terminations.</p>
203 204	<p>Communication has failed with a device on the S-COM (internal or external) lines.</p> <p>Note: Usually occurs because an input/output device has been disconnected or has become inoperative since the system was powered-up.</p> <p>Code 204 can also occur when a <i>SCENEMAKER</i> is disconnected from the system.</p>	<p>Check that all S-COM devices are on-line and functioning correctly.</p> <p>Check all S-COM data highway wiring, connections and line terminations.</p>

Code	Likely Cause	Action
240	<p><i>SCENESET</i> has received too many messages – some actions may not have been completed.</p> <p><i>Note:</i> This is most likely to occur in smaller systems which are being used at their maximum capacity.</p>	<p>If this occurs regularly, then the present system configuration is possibly inadequate for the application. System expansion should be considered.</p>
243	<p>A ‘slave’ <i>SCENESET</i> has stopped receiving messages from the ‘master’ <i>SCENESET</i>.</p> <p><i>Note:</i> This code appears on the affected module.</p>	<p>Check that the ‘slave’ module is on-line and functioning correctly.</p> <p>Check all S-COM (internal) data highway wiring, connections and line terminations.</p>
244	<p>An S-COM device is occupying an address which is being used by another device.</p>	<p>Check that the addresses for each S-COM device have been set correctly by referring to the appropriate User Guide.</p>
302	<p>A <i>DIMMER</i> module is not responding to control messages.</p>	<p>Check that all <i>DIMMER</i> modules are on-line and functioning correctly.</p> <p>Check all S-DIM data highway wiring, connections and line terminations.</p>
312 313 314 315	<p>Data corruption on S-DIM line.</p>	<p>Check for correct S-DIM line terminations.</p> <p>Check that two or more separate <i>DIMMER</i> modules are not sharing the same channel address.</p> <p>Check all S-DIM data highway wiring and connections.</p>
401	<p>An attempt has been made to commence a scene link when a maximum of 32 links are already being processed.</p>	<p>Reduce the number of linked scenes in the system or reduce the link delay times.</p>
601 602 603	<p>Invalid parameters received from <i>SCENETIMER</i>.</p>	<p>Check that <i>SCENETIMER</i> is set-up with correct time, date, longitude and latitude settings.</p>

Communication Codes

Generally, the occurrence of these codes will not cause serious problems, although some minor disruption may be noticed.

Code	Likely Cause	Action
221	There has been data corruption on the S-COM lines.	Check that line termination switches are correctly set on all S-COM devices and on the Breakout Module.
222		Check that two (or more) S-COM devices are not set to the same address.
223		
224		
225		
226		
230		
231		
240	The maximum permissible number of devices that can be connected to S-COM has been exceeded.	Check that no more than 30 devices are connected to the S-COM (external) highway.
241	A device which was connected to S-COM at power-up has been disconnected or has become inoperative. This code is likely to occur when a <i>SCENEMAKER</i> is disconnected from the system.	Check that all S-COM devices are on-line and functioning correctly. Check all S-COM data highway wiring, connections and line terminations.
305	S-DIM line not reacting correctly.	Check for correct S-DIM line terminations. Check all S-DIM data highway wiring, connections and line terminations.
306		
307	<i>DIMMER</i> address changed while communications in progress.	Return the <i>DIMMER</i> to its original address or re-power the <i>SCENESET</i> .
315	A <i>DIMMER</i> module has reported an S-DIM communications problem.	Check for an E50, E52, E53, E54 or E56 code displayed on one or more <i>DIMMER</i> modules.
317	A <i>DIMMER</i> module has reported an over-current condition.	Check for a C01, C02 or C03 code displayed on one or more <i>DIMMER</i> modules.
318	A <i>DIMMER</i> module has reported an over-temperature condition.	Check for an E51 code displayed on one or more <i>DIMMER</i> modules.
319	A <i>DIMMER</i> module has reported a severe over-temperature condition.	Check for an E07 code displayed on one or more <i>DIMMER</i> modules.
320	A <i>DIMMER</i> module has reported a level override condition. <i>Note:</i> This is caused if one or more <i>DIMMERS</i> have their level override activated other than by the <i>SCENESET</i> watchdog circuit (e.g. by a separate security system).	If level override is still active, the affected <i>DIMMER</i> display(s) will indicate this. If this is not caused by a security system, check for correct wiring on the watchdog circuit.

DATA STATUS INDICATORS

The four pairs of red and green LEDs on the *SCENESET* control panel show the status of the following data lines:

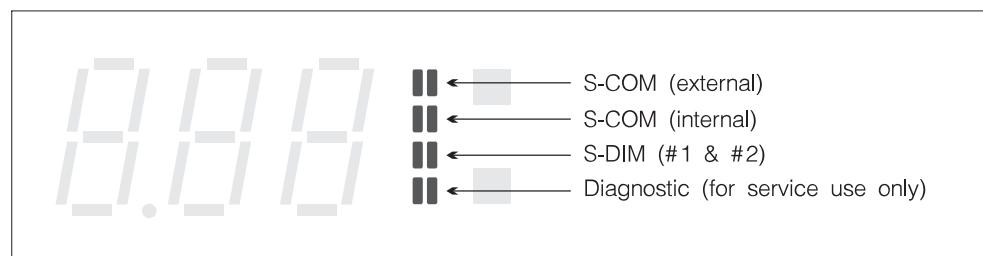


Fig.4-1: Data status indicators.

The left-hand (red) LED in each pair responds to data transmission, whilst the right-hand (green) LED responds to data reception.

These mimic the logic condition (0 or 1) of each data line and all the LEDs should glow brightly during normal operation. If a large number of transactions are occurring, some LEDs may flicker slightly or go dim.

If one (or more) of the LEDs stay dim for a long period or does not light at all, this could indicate a fault on the corresponding data line, in which case a diagnostic code will have been generated.

S-COM Supply Fuse

The power supply for the S-COM data highway is fitted with a fuse to protect against overload or short-circuits. The fuse is located in a holder behind the right-hand access plate (adjacent to the card slots).

Replacement fuse type: 20mm fast-blow.

Fuse rating: 1.25A.

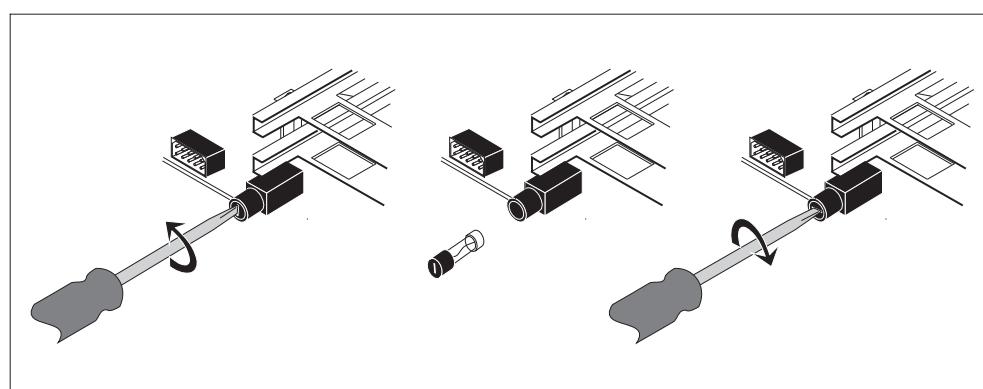


Fig.4-2: Removing the S-COM supply fuse.

PROBLEM DIAGNOSIS

If the *SCENESET* Lighting Controller fails to operate as expected, it is more likely to be the result of incorrect setting-up or programming than a fault with the unit itself. Alternatively, there may be a problem elsewhere in the system.

Before calling for service, check through the following list of problems and likely causes:

Problem	Likely Cause & Remedy
Display is blank.	No power supply. Check that a supply is available to the MCB, and that the MCB is 'ON'.
Display shows three dashes '---' and does not operate correctly.	This indicates that the <i>SCENESET</i> is unable to read the <i>SCENESOFT</i> card. Check for the following: <ul style="list-style-type: none"> • card not present in slot 'A', • card not fully inserted, • card is wrong way round, • card type not valid, • card not programmed.
<i>SCENESET</i> appears to be functioning correctly but <i>DIMMER</i> outputs are not responding to S-DIM control.	Incorrect or faulty connections on the S-DIM data line. Check connections. <i>SCENESOFT</i> card not programmed.
The <i>SCENESET</i> is not recalling scenes.	Incorrect or faulty connections on the S-COM data line. Check connections. <i>SCENESOFT</i> card not programmed. S-COM supply fuse blown.

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The logo consists of the word "HELVAR" in a bold, sans-serif font, with "ELECTROSONIC" in a smaller, bold, sans-serif font directly below it. To the left of the text, there is a graphic element consisting of six parallel diagonal lines of varying lengths, creating a stylized 'V' or fan-like shape.

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